Industrial Finishing

An Independent Publication Devoted To The Finishing of Industrial Products

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With the Editor

WHEN we prepared to write October copy for this page, to remind you that INDUSTRIAL FINISHING is planned to serve your needs, to hold your interest and to command your respect, we came across a foreman finisher's letter which presents a gratifying fact and an interesting forecast.

"I read INDUSTRIAL FINISHING through and through, and find the many practical articles and suggestions a help to me. It surely is a medium by which the practical and up-to-date finishers can get together and help one another through an interchange of ideas.

"With the introduction of the modern finishes, it appears to me that there are going to be wonderful strides made in the wood-finishing line as well as in the metal products line; and through the co-operation of manufacturers of finishing materials and the users of same, we are going to be able to get the desired results much sooner than otherwise. I certainly appreciate any information in regard to the material, or application of same, that will help to get the desired results in the shortest time."

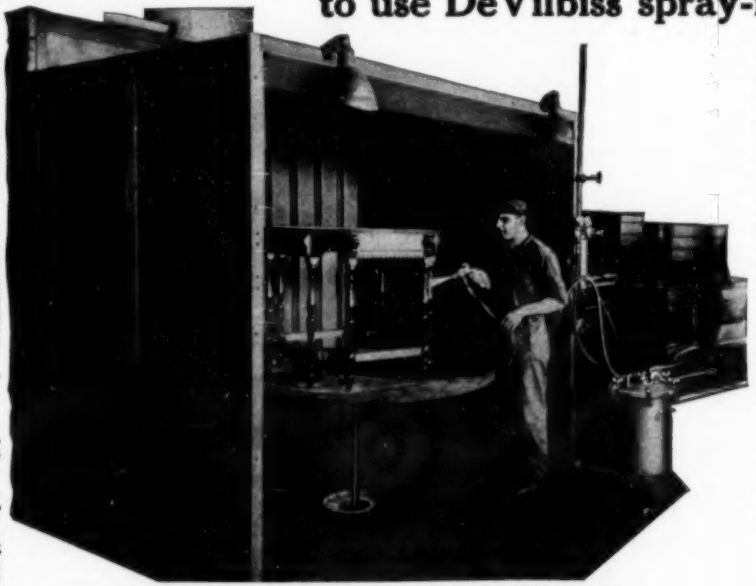
The above letter from J. W. Russell, Wausau, Wisc., is typical of many others received. Through the manifest interest of influential readers, the timely co-operation of those who write articles, and the splendid support of advertisers, we have been encouraged to carry on and to constantly improve INDUSTRIAL FINISHING. Next month, Vol. III, No. 1, will hold another surprise for you, in the way of improvement.

W. H. Rohr

Managing Editor

What it means to you

to use DeVilbiss spray-finishing equipment



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Ventilation and Fire Protection

Describing and illustrating some specific features and equipment now installed in the finishing department of a large furniture factory

By F. W. Worthington

ADEQUATE ventilation and means for reducing the fire hazard and for combating a blaze that might start in spite of all precautions taken to prevent it—these are features which deserve particular consideration and attention by every concern that operates a finishing department or paint shop. Ventilation of the right kind contributes to the general health and comfort of workmen, thereby reducing to some extent the causes of fatigue and making more easy the task of turning out high quality work in greater volume; it also helps along the drying of articles in process and, through the removal of fumes, it reduces fire hazard.

The reduction of fire hazard through whatever means are available or practicable, and the provision of suitable fire fighting equipment, makes the place a better risk and as a consequence the establishment merits a lower rate of fire insurance, which in turn, cuts down the overhead expense. Aside from any selfish monetary consideration, the reduction of fire hazard in any locality is an obligation that every concern involved owes to itself, its employes, its neighbors and all those with whom it does business.

Going a step further than the strict regulation measures prescribed in this matter, is commendable too, not only for the good example set forth but also for the confidence and peace of mind instilled in all individuals concerned. This is worth something—knowing that the finishing room or paint shop is reasonably safe, and that if fire does start every facility is provided close at hand for immediate use in effectively combatting the blaze.

One of the furniture manufacturing concerns that has gone a little further than usual with the installation of ventilation, fire prevention and fire extinguisher equipment has, among others, a room of the floor plan shown in Fig. 1. This room is typical of others adjoining it on the second floor and it is illustrated here merely as a matter of convenience. This is the room in which the last coats of varnish or lacquer are put on at booths marked B, B, and where the finished furniture is left at rest to dry and to rub later. The furniture passes down elevator E to the packing and shipping room.

Ventilation Features

In addition to the ventilation afforded by exhaust fans in the spray booths and by windows on

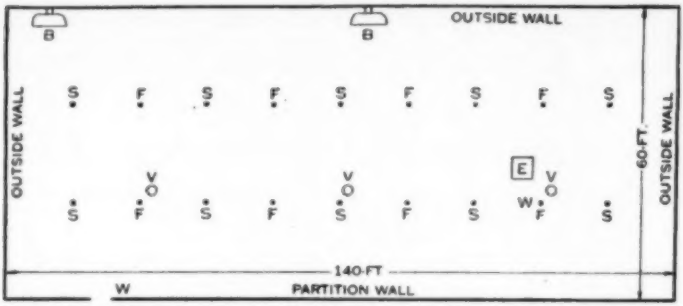


Fig. 1—Floor plan of one finishing room showing spray booths *B, B,* ventilating flues *V, V, V,* and supporting posts to which fire extinguishers are hung. Water tanks containing filled water buckets are marked *W, W.*

three outside walls, there are three ventilating flues marked V, V, V in Fig. 1. Each of these flues consists of a sheet metal pipe 16-in. in diameter, the lower edge of each pipe being about 30-in. above the floor. Each pipe extends upward through the ceiling of the second floor and through the ceiling and roof above the third floor.

The flues formerly in service were smaller and of the natural draft type, but during much of the year they were not effective in establishing any perceptible movement of air.

With the adoption of lacquer finishes, the company decided to change the type of fan drive in each of the spray booths, the idea being to replace the directly motored fans with fans that are belted to motors located outside the booth discharge pipes. Accordingly, it was decided to use the old directly motored booth fans to promote a better draft through the finishing room flues.

The new flues are 16-in. in diameter, and just below the ceiling of the third floor, each pipe is fitted with two elbows and a horizontal section as shown in Fig. 2. Inside the short horizontal section of each pipe, a directly motored booth fan is installed. Access to the motored fan is obtained either by opening a small slide door in the pipe or by removing the lower elbow in the pipe. Remote control of each fan motor is provided in the form of a snap switch located on the post adjoining the flue on the second floor. Adequate protection for both the motor and the maintenance man is afforded by a fuse box and snap switch close to the fan as marked F, in Fig. 2.

With these fans operating in the flues, a forced circulation of air is obtained and it is under control. If at any time the circulation is more than seems desirable, one or all fan motors can be stopped.

Ventilation, cleanliness and the usual industrial precautions are largely relied upon to keep the finishing department safe from any possibility of a fire starting, but to supplement all this, modern equipment is provided for combatting a fire in case one does start. Every one of the 18 supporting posts in the room carries an extinguisher hung high enough

to be out of the way but at the same time within easy reach for immediate use.

Fire Extinguishers

Hanging at each of the posts marked S, in Fig. 1, is a bucket of sand, and at each of the posts marked F, is a "Foamite" chemical fire extinguisher, the contents of which are especially designed to smother a fire. In addition to these 18 extinguishers, there is provided at two stations marked W, W in Fig. 1, a filled tank containing six buckets of water. Instructions are posted regarding the use of each of the three kinds of fire fighting equipment.

In an adjoining room where dipping vats are in service, there is a 16-in. ventilating flue (like those previously described) above each vat, to carry away fumes. A fire extinguisher is also suspended in tilted position above each vat, the mounting of the extinguisher being illustrated in Fig. 3. The extinguisher rests in an iron basket and its handle is wired to the top rim of the basket to prevent it falling out when the basket swings into inverted position.

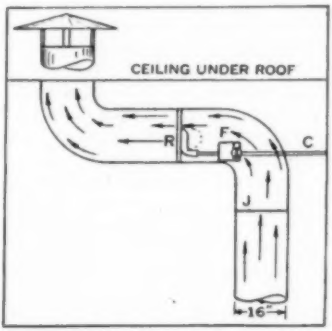


Fig. 2—This turn in the pipe was necessary to accommodate the type of motored fan used. The fan is mounted in its original iron ring *R*. The fuse box and snap switch unit is marked *F*; the safety conduit, *C*; and the joint in pipe, *J*.

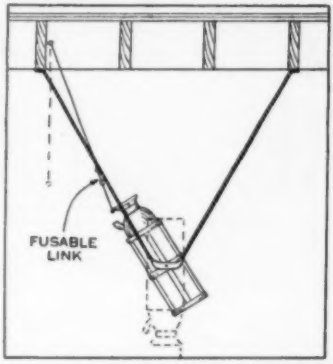
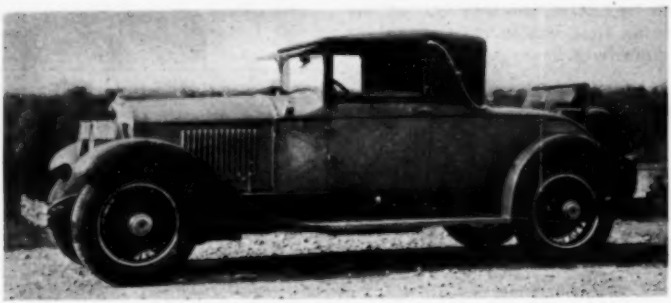


Fig. 3—This mounting of the extinguisher above a dipping vat makes it function automatically in case of fire.

The basket is pivoted to swing in iron brackets, and when the fire extinguisher is positioned in it the heavier end is up. Two lengths of wire joined with a fusable link hold the basket in the position shown in Fig. 3. Heat, intense enough and coming near enough, will cause the fusable link to melt and thereby dump the contents of the extinguisher into the vat below. Each vat is provided with a drain which can be opened in case of emergency.

Another interesting feature in this finishing department is a self-measuring benzine pump located in the staining room. This safety pump is used to draw benzine up from a buried tank. Every electric light globe in the finishing department is inclosed within an extra glass casing which measures about 4-in. in diameter by 7-in. in length.



A car that drew considerable attention at the show—Cadillac two-passenger coupe (convertible into four-passenger). Cathedral gray body; St. Albans green fender and lower body; orange wire wheels; striped in green; Nitro-cellulose lacquer finish.

Motor Car Finishes for 1927

Notes on finishes and colors of the 1927 models, unveiled this year four months ahead of time at the Automobile Show of the Greater St. Louis Exposition

By E. F. Werner

NOTE BY AUTHOR: The following is based on an interview with Captain Robert E. Lee, secretary of the St. Louis Automobile Dealers, and manager of all the automobile shows in St. Louis for the past nineteen years.

The automobile show, which was held as a principal and striking section of the Greater St. Louis Exposition from Sept. 4 to 19 inclusive, was another exemplification of the fact that mural decorations of symphonetic character are of great importance in bringing out paint finishes. House decorators know this and automobile show managers found it out many years ago.

The mural decorations of the automobile section of the Greater St. Louis Exposition, by which is meant the wall and overhead drapings, were perhaps the most beautiful in design and color harmonization ever used at any automobile show.

The automobile show at the Exposition was staged in two immense tents, each of them a city block long. Specifically they were 300 ft. long by 100 ft. wide. One of the tents was decorated with purple and gold as the motif. The purple was the solid background and ceiling covering; gold cloth with fringes of gold was draped in an artistic manner from the roof and sides and center poles so as to entirely hide any indication of canvas tent. The other tent had for its decorative motif yellow and silver fringes, which also made a striking effect.

These two color schemes blended into and brought out the paint jobs on the various automobiles in a very unusual way.

There were 46 exhibitors of motor cars of all makes and there were a few trucks, one taxicab, two tractors and one bus also shown.

Mostly Laquer Jobs

The tendency in the paint jobs on the cars was all towards the two-tone effect, and there were comparatively few of them in high or glossy finish, the new lacquer effect being used very largely.

The lacquer effect, by which is meant the various dull finishes used by the various manufacturers, seems to have gained wide vogue in the automobile industry and it has been forced upon the public regardless of the public's demand for it. That it has its advantages in durability and in its non-scratch, is acknowledged by all, but there are still many who much prefer the brilliant luster of the varnish finish. Many used cars these days are repainted or refinished with a glistening of varnish finish, which is rather an indication that some of the public prefers the glossy effect.

The criticism on some lacquer finishes, heard among owners even at the automobile show in St. Louis, was that a new car and an old car look practically alike until the finish is almost worn off or so badly stained that its effectiveness is gone. This is not so with the varnish, which embellishes and marks out any car on which it is used as being new as long as it continues to glisten.

However, the nitro-cellulose finish is almost universal and was so at the Exposition. Comparatively few cars at the automobile show were in bright colors. There was some tendency toward yellow, tan and gray, but a large percentage of the cars were in dark blue. Brown seems to have disappeared and there were few cars shown in maroon. The entire color scheme was, therefore, either light in two tones, or the darker shades in two tones of blue, or of black and blue. It is safe to assert that 90 per cent of all cars shown were in the dull finish.

Auto Show Popular

The Exposition, in spite of several days of heavy rain, which made the grounds almost impassable, because of mud, closed September 19 as a success. The attendance had been very large, the entertainment features were as good as were ever offered at any Exposition and the attendance at the automobile show section of the Exposition was about 60 per cent of the total attendance at the Exposition itself. This proved entirely satisfactory to the exhibitors of motor cars who reported that many sales had been made during the sixteen days of the Exposition and that hundreds of names of prospects had been gathered by the salesmen for the various concerns.

* * *

The following news notes on finishes and color schemes of various cars appeared in the Automobile Sections of leading St. Louis newspapers:

Nearly every manufacturer of motor cars has made more or less striking changes in design or finish or mechanism of his 1927 models. The color schemes are different. Striking color finishes, some in two-tone and some even in three tones, are the rule.

Auburn. The characteristic hood and the duo-tone color effects on the Auburn won many

favorable comments. All Auburn models are distinctive in fitments and interior finishing as well as on the exterior.

Buick. One of the largest exhibits was that of Buick models, showing the new two-tone effects in exterior finish and the carrying of the body color onto the window frames.

Cadillac. Noticeable among the Cadillacs was a custom phaeton with Don Lee type windshield. Exterior finish was Argyle gray with panel effects outlined in gold.

Dodge. The new Dodge sport roadster was prominently displayed and made a very attractive appearance with its brilliant pheasant green lacquer on body and hood, contrasting with the tan top and black fenders and running gear.

Franklin. One of the striking cars shown was a low hung Franklin roadster done in cream and elaborately finished and appointed. A noteworthy detail is the scrupulous care and craftmanship with which the rear deck, and every other part of the car is finished.

Hudson-Essex. The new Hudson and Essex cars, with all-steel bodies after a distinctive design —with lacquer finish on the Hudsons and baked enamel on the Essex coach—were features that caused approving comment.

Jewett. The new Jewett shows refined body lines. The windows have round corners with the latest color reveals and striping. "Reveal" is the name used to designate outside window sills finished in the lighter body color to relieve the black of the top. This touch adds much to the smart appearance of the cars. Double belt moldings with three-tone finish make the cars look longer.

The interior trim is in walnut finish. It includes a new instrument board with instruments grouped in an indirectly lighted panel, door panels with inlaid effect, all-walnut steering wheel and a walnut-finish strip across the back of the front seat.

The new 4-door sedan is lacquered in marine blue, with a belt of marine blue and black upper body, and is striped in cream. Window recesses are in marine blue, outlined with a cream stripe. The brougham is finished in light beige lacquer below the belt molding and in fawn gray above, with stripes in apple green. The top is black with window recesses in light beige, with green outline stripes.

Jordan. The new custom style sedan is finished in Cossack brown and "zarina beige," and two-tone Labrador smoke and sandovar green. The new custom style victoria comes in either Pelham blue and Larchmont blue or two-tone Hamlet gray and manor gray. The instrument board is in burl walnut.

Nash. For the exterior of new Special Six Nash models, a new duo-tone finish of contrasting colors is used. Both the open and the closed models are finished in polychrome combinations.

Reo. A Reo roadster with much dash and sparkle is finished in two-tone green, with gray leather upholstery, khaki top and natural wood bows.

To make no improvements is to stand still, and it is only a short step from this point to retrogression.

This mixed-lacquer finish opens up interesting possibilities in Furniture Decoration

New Finish for Novelty Furniture

In general this new wood finish is secured by incorporating coloring matter in the first coat of clear lacquer which is applied directly to bare wood

By R. L. Masterson

THE success of novelty furniture, such as end tables, smoking stands, sewing cabinets and breakfast room furniture, depends upon a unique or novel finish almost as much as upon a design that is not too conventional. Crackle lacquers, lacquer enamels and similar finishing materials have been used successfully for this class of work, especially where the monotony of color is broken by transfers, hand painted designs and other decorations such as those produced by antiquing, shading or high-lighting.

Transparent Colored Lacquer Finish

Recently an entirely new type of finish has been gaining popularity, and rightfully so, too, for the finished results are very pleasing. This finish might be called a "transparent colored lacquer finish," inasmuch as it is something of a cross between the conventional transparent stained finish and the solid covering lacquer enamel finish. In other words, the grain of the wood is allowed to show through partially, yet the speed and beauty of finish obtainable with lacquer enamels is present.

The exact procedure followed in obtaining this type of finish varies, of course, with each manufacturer, according to the type of wood used, the shade wanted in the finished work, and the materials at hand with which to work. In general, however, this new finish is secured by incorporating coloring matter of different kinds into the first coat of clear lacquer which is applied directly on the bare wood. This gives a stained appearance to the wood and at the same time that a coat of finishing material is applied to build up body on the work.

Mixtures and Methods

One of the most general methods used is to mix a small quantity of lacquer enamel, of the desired color, with a larger quantity of clear lacquer. The proportion of lacquer enamel will vary according to the depth of color desired, but a good mixture is considered to be about one part of lacquer enamel to 12 or 15 parts of clear lacquer. Either clear wood lacquer, flat lacquer or a clear lacquer primer can be used for this coat.

Some lacquer manufacturers have a clear lacquer primer which gives very good results, inasmuch as it can be sanded smooth in five hours with greater ease than if a clear lacquer is used, and it also has better filling or surfacing properties inasmuch as it

contains a liberal quantity of transparent pigment.

Decorations and Final Coats

After this first coat has dried, it should be sanded smooth and then the decorations, such as striping, transfers or shading colors, may be applied. When these are dry, one or two coats of clear wood lacquer without any coloring matter added should be applied and the surface rubbed smooth. If a clear, flat-drying lacquer is used instead of the clear wood lacquer, this rubbing operation can be omitted.

By selecting the proper shade of lacquer enamel and the right proportion for its use with the first coat of clear lacquer, a large variety of pleasing colors can be secured. For example, a dark brown mixed with the clear lacquer will give a good imitation of American walnut. By using a weaker solution the color can be lightened to a French walnut or Huguenot walnut. A small quantity of black will give a good Italian walnut. Bright red and dark green also give very pleasing colors when mixed in the right proportion with the clear lacquer.

Imitating Expensive Woods

One of the good features of this type of finish is that it can be used on gum, poplar or other plain soft woods, and it will give a finish that imitates the more expensive walnut or mahogany. Due to the fact that the color coat is applied by spraying, a certain amount of self antiquing or high-lighting can be done by spraying more sparingly in some places than others.

An Alternative Method

An alternative method for producing this type of finish is to use either spirit soluble stain powders or Japan colors for mixing with the first coat of lacquer to produce the colored effect. The spirit soluble stain powders are better suited for the lighter, more transparent shades and the Japan colors for the more solid covering, darker shades. In either case the coloring matter should first be mixed with or dissolved in lacquer thinner or reducer, and then carefully strained to remove any particles that might not be dissolved.

This colored reducer solution should then be added to a good grade of clear wood lacquer at the rate of about equal parts of lacquer and reducer and the resulting mixture sprayed on the surfaces evenly and uniformly to get an even shade of color. After this coat is dry, one or more coats of clear lacquer, or flat lacquer with no color added, can be applied to give the final finish.

The use of spirit soluble stain powders or of Japan colors is not so satisfactory, as a general rule, as is the use of lacquer enamels for tinting the first coat of lacquer. Spirit soluble colors are not entirely fast to light and they may fade out after the work is finished. Japan colors are more likely to give a gritty, cloudy finish. If too large quantities of either material are used in the first coat there is danger of making the finish brittle, but where lacquer enamels are used as the coloring medium the toughness will be retained.

Suited to Close-Grained Woods

As mentioned previously, the recommendations given above are well suited for use on close-grained woods such as birch, gum, whitewood and similar species that require no filling. On walnut or mahogany a slight-

ly different procedure can be followed, if desired. To produce a semi-open-pore finish on mahogany without the use of stain or filler, the first coat should consist of a clear lacquer which has been tinted with a solution made as follows:

Dissolve a small quantity of picric acid in alcohol and then add a small quantity of spirit soluble orange stain powder. Strain this solution and add a sufficient quantity of it to a clear wood lacquer to give a light yellow, uniform color over the work when applied by spraying. The main purpose of this first coat is to unify the color of the wood on all parts of the work.

Antiquing

After this first coat has dried about five hours, the shaded parts of the work should be antiqued with antiquing stain, applied with a spray gun, held a considerable distance from the work, so as to fog—on the antiquing stain only on those parts that are to appear darker when the surface is finally finished.

After the antiquing stain has dried about an hour, a coat of full-bodied clear wood lacquer should be applied by spraying, without any color being added to it. This coat of clear lacquer should be dried overnight, then dry sanded with fine sandpaper, followed by a rubbing with No. 0000 steel wool and finally finished off by waxing. This gives a semi-open-pore finish without the use of stain, and it is particularly adapted to the antique effects.

Process on Walnut

On walnut the procedure is a little different than on mahogany. In this case a coat of full-body clear wood lacquer, without any coloring matter added, should be applied directly on the bare wood. In other words, the color of walnut wood is usually more uniform than that of mahogany and it does not require a unifying stain.

After this first coat of clear lacquer has dried about five hours, the surface should be antiqued by fog spraying with antiquing stain, applying only a little stain toward the center of the panels and increasing the amount nearer the edges, so as to get a gradually deepening color from the center of the panels toward the edges. After the antiquing has dried about an hour, another coat of clear lacquer, full body, without any color added to it, should be applied and allowed to dry overnight. Following this, the surface should be sanded, rubbed with fine steel wool and waxed as outlined for mahogany.

By using the above mentioned methods, or variations of them, some very pleasing results can be secured without the expense of stain or filler. At present this type of finish is used mostly on novelty furniture but undoubtedly it could be used in one form or another on bedroom furniture and other case goods with equal advantage.

Color Matching

Most colors are more or less fugitive, particularly in certain kinds of light. Most whites turn yellow in the dark, but many of them may be bleached out to their original whiteness by placing them in the sun.

Many colors appear identical under a given artificial light but may appear very different under

daylight or even under artificial light of a slightly different quality.

The character of a surface may also introduce a variable in color matching, as for example, the change in tint of a pigment when it is coated with a perfectly transparent and colorless lacquer.

Color matching in the usual way may be entirely inadequate unless the character of the surface and quality of light are the same for each observation.

Perhaps the least fugitive colors for use as standards are those made in porcelain or fired enamel, but even here there is no assurance of permanency without the aid of the spectrophotometer.

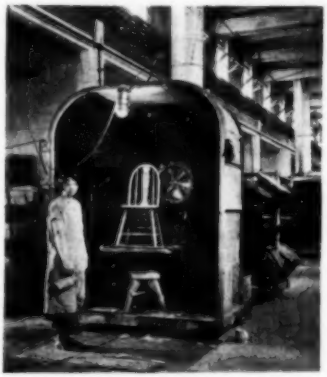
It must be remembered that there is no way of matching colors more accurately than placing them side by side and comparing them visually. On the other hand, a drift of the standard cannot be detected by this means. Master standards of color should be verified at sufficiently short intervals to determine the degree of permanency which the surface will maintain.—Paint, Oil and Chemical Review.

Portable Spray Booths

Few manufacturers, probably, have any occasion to make their spray booths portable, but here is an exception. The finishing department of this plant is divided up into small drying-rooms opening to a central passageway.

A portable spray booth is located at the end of every other partition so that the spray operator can spray articles to fill one room and then turn the booth around to face the opposite direction and spray articles to fill the adjoining room.

With rapid drying finishes in service, this shift of the booth and operator gives enough time for the articles in one room to dry and be removed while an adjoining room is being filled. As soon as one room is filled with newly coated articles, the booth and operator shift position and the filling of the adjoining empty room begins. Each portable booth has a wood framed base covered with sheet metal and is mounted on double-wheel swivel casters.



This booth can be turned around to face the opposite direction.

An added improvement in this booth could be made by placing a removable apron across the lower front part of the booth to prevent any of the spent spray from escaping along this space and causing discomfort to the operator and perhaps damage to her stockings.—R. E. W.

To Make Lacquer

A lacquer plant will be established in Cincinnati, Ohio, by the R. F. Johnston Paint Co. About $100,000 will be spent upon the plant.

Superintendent of Newark Varnish Works, Inc., defines crackle effect, tells how to produce it, and calls attention to its merits and possibilities as a decorative finish.

The New Crackle Finish

By Robert Cowan

ONE of the newest and certainly one of the most attractive finishes which has recently been developed is the crackle finish. It is a direct result of the progress being made in the field of cellulose nitrate coatings, and it has won immediate favor with the trade. The crackle effect is not entirely a new one. A large manufacturer of pencils has been using it for a great many years. The materials in this case were special varnish enamels.

Manufacturers of baking enamels all have experienced trouble with cracking of their finishing coats in certain instances, particularly where japan colors were used in the manufacture of these finishing enamel coats. In this instance it was a problem to be solved and a difficulty to be overcome, rather than a new finish developed.

What Causes Crackle

The present materials are built upon a nitro-cellulose base similar in character to the usual lacquer materials. Dependence is placed upon the lack of elasticity in the finishing coat for the crackle effect. The film of the top coat ruptures and pulls apart as the undercoat, which was softened by the thinners in the top coat, dries; and as the cracks open up the contrasting color of the undercoat shows through. All combinations are possible, any color being obtainable in either the base lacquer undercoat or the crackle finish.

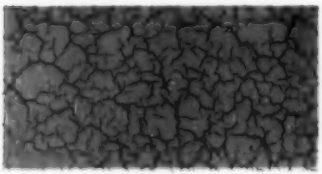
The first of this new finish appeared on the market a little over a year ago. It has found use on a great variety of articles. Metal and wood furniture, phonographs, radio cabinets and loud speakers, ornamental household articles of metal and wood of all descriptions, are being displayed. Smoking stands, serving trays, book ends, candle sticks, picture frames and table and floor lamps are among the items which appear in the showrooms of a great many stores.

Leatherette Crackle

A leatherette finish of unusual attractiveness is obtained by us-

ing a black crackle finish over a black undercoat. Here there is no color contrast, but the surface closely resembles grained leather. An extremely artistic effect of great beauty and dignity is obtained by the use of a gold and black combination.

A thin coat of clear lacquer is advisable over the crackle coat to protect it and produce a gloss finish which may be left as such or rubbed and polished to any degree of brilliancy. The size and number of cracks is varied at will by increasing or decreasing the quantity of the crackle material, which is sprayed on; also by varying the quantity of thinner in the base crackle. Undercoats of lacquer or oil primer greatly improve the adhesion on metal objects. Their presence also lessens the likelihood of the colored crackle undercoat pulling apart with the crackle coat.

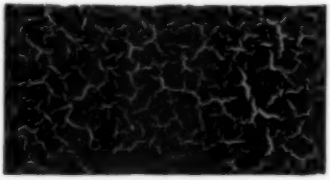


A typical sample of crackle finish wherein the dark undercoat shows through the cracks of a light colored top coat.

Merits of Crackle

As advantages of this new decorative finish, many may be listed. The material is sprayed, making application a simple procedure. Production becomes speeded up because of the rapid drying of the materials, which greatly shortens the periods between the coats. Finishes in contrasting colors are undoubtedly more effective than those obtained with a single plain color.

A satisfactory surface may be obtained in two or three coats without extensive preparation of the surface. The crackle effect



A bit of crackle finish with the light under coat showing through a dark top coat.

masks completely all draw marks in metal objects, rough spots on castings and plane marks on wood surfaces. The time, labor and material items, which must be included in computing the cost of finishing all kinds, should be materially reduced with the application of crackle finish.

Has Sales Appeal

Retail shops handling furniture, radio and electrical equipment, toys and novelties are displaying merchandise finished in very attractive crackle effects. Their reports indicate that this new finish has met with public favor and sales have been very pleasing. This new finish has already established itself and as new fields for application of crackle finish open up, the demand mounts rapidly. It gives promise of soon becoming a very popular and much talked of item of the industrial finishing line.

Bink's Man to New York

Mr. M. J. Sullivan, formerly Sales Manager of Binks Spray Equipment Company's Chicago Office, is now at New York City, having taken complete charge of the new elaborate Eastern Branch Office of Binks Spray Equipment Co., located at 56-58 Warren St., New York.

KRAKALAK

One of the greatest developments in recent years, contributing

SALES APPEAL to Your Product

A unique decorative feature put on at no greater production cost than the ordinary finishing coats.

A new finish for any surface furnished in different color combinations to produce many beautiful effects.

Easy to apply—Dries quickly.

Particularly adaptable for wood and metal furniture, fixtures, radio cabinets, novelties, toys, and many other products.

If you are looking for something distinctive, to liven up your line, ask us for further information.

NEWARK VARNISH WORKS, Inc.
NEWARK, N. J.

Krakalak - Lacquer-Varnish - Paste Filler - Stains

How an European Designer regards American Furniture

Furniture Decoration Designing

This designer sets forth his impressions of Modern American Furniture and points out the features in our finishes and decorative treatment which impress him particularly, from an artistic standpoint

By Ernest Bolle

BEFORE coming to this country from Europe I heard much of America's great and far advanced furniture industry, but at the same time I often heard disapproval and doubt expressed concerning American art, knowledge of style and finish. I have been many years in the furniture line and am rather well experienced on the design and artistic finish of any kind of furniture, so may well possess a right to give a proper and clear judgment.

It must be considered of course, that the European boasts with centuries of education and experience in art as a background. The rich treasures in his public collections and museums give him splendid opportunities to study art and base his inventions and designs on the beauty of original products of many centuries in architecture and construction of furniture. But it is true, also, and to be regretted, his arrogance leads him to look down upon other nations and countries outside of Europe, and does not permit him to consider them capable of bringing out anything really artistic and equal to

For Evenness of Tone

We Can Help You!

The antiquing of furniture is made easy, and that much sought for evenness of tone is acquired with our method of shading with Brown Lacquer Glazing.

Following this method with Gravarco 1009 Clear Lacquer and Gravarco 1022 Flat Lacquer produces the most durable and economical finish possible to obtain.

We believe we can be of material assistance to you in the development and management of new finishes in your finishing room. We are always glad to serve.

Tell Us Your Particular Problem

Grand Rapids Varnish Corporation

GRAND RAPIDS, MICHIGAN

Los Angeles Chicago High Point Jamestown

the high standard of European art and design. This is wrong and a great mistake on their side, especially in Germany.

For a long time I have had the wish and intention to visit America to study conditions and progress in industrial art, especially art in furniture in order to come to a clear insight and a just judgment about American art.

Arriving here from Germany about two months ago, I have, I must confess, found quite different conditions from those over there, in every kind of industry, especially in the furniture line.

Design to Suit Homes

In a country like America, furniture must necessarily be not only differently designed and constructed, but it must also carry a different appearance in finish and decoration. The architecture of buildings, the prevalent bungalow style and cottage type of dwelling is quite different from those over there. In Europe, the inner architecture requires furniture to be of a severely earnest looking appearance, which would be quite out of place in this country. For instance, in Germany heavily carved oak furniture prevails—much too heavy to my liking.

In my opinion the American has the right feeling for comfort and coziness in his home, and he adapts his creations of furniture very successfully and luckily to the architecture of his dwellings. I can well say I found, after having inspected the Chicago July Furniture Trade Exhibition, soon after my arrival here, that the American furniture manufacturer can be very proud of his excellent products. The artistic finish and design of his exhibits allows him not only to face European art in furniture, but to be in many directions far superior to it. His good taste beats the European entirely.

Variety in Woods

The great variety and good quality of woods are certainly a great help to the American, enabling him to give his furniture a first class finish. How nicely he treats the walnut and mahogany, giving it such lovely shadings and tints in the finish and with just a modest looking painted spray of flowers attached to them he gives them a charm unsurpassed.

This good taste, which as I said before, beats the European by far, leads him to introduce into, and decorate his cozy homes with colored lacquer furniture of

FLAT OIL FINISH

The ideal drawer and inside finish.

Made in natural colors or any color desired.

No filling—no sanding—just spray two coats and the job is complete.

Feels like velvet—looks like it was oil rubbed.

Dries within one hour.

Advance Paint Co.

Manufacturers of

Wood Finishing Materials

INDIANAPOLIS, IND.—*factories*—EVANSVILLE, IND.

Saves more than it costs

Let us show you what a beautiful interior finish this makes by having our special representative demonstrate its wonderful labor-saving and business-building qualities.

exquisite design and fine, high grade finish. I admire it greatly.

Handling Decorative Features

Jade green, meerschaum, Japanese red, Mongol blue and many other numbers cleverly shaded and decorated with painted flower sprays, add great charm to any home in this country and show individuality of the American furniture producer, whereas in Europe they hang slavishly on to strictly conventional forms in furniture.

As pretty pictures on the walls bring a certain coziness into the room, so naturally do prettily colored small articles of furniture, for the cottage home, lend great charm and brightness to the rooms.

Now a word about the decoration on these lovely colored and shaded pieces of furniture. Let it just be a lightly painted spray of a flower—only just a spray—not the usual inartistic clump of unnatural looking roses, as I have had to observe so often. They spoil the effect and bright appearance of such lacquered furniture.

How lovely a spray of orange yellow orchids on small walnut tables, or a carnation, or natural poppy, clematis, lily, coreopsis, morning glory, or sweet peas, etc., harmonizing with the different colors of the lacquers? What a striking appearance they bring? But, let Nature be your guide, for Nature is the cradle of Art!

Care of Rubbing Machines

In furniture production today, when each piece of machinery used is relied upon to produce the maximum amount of work, electric and compressed air rubbing machines play a very important part, and it is to the interest of all concerned that they be kept in proper working order at all times. It will be found that by giving them a thorough cleaning—flushing each machine with clean naphtha at least once each week and after wiping dry, giving the machine a good oiling with a thin machine oil of the best grade—that the machine will give fine results and very little if any trouble will ever be encountered.

Before starting a day's work the machine should be oiled and the felt pads examined. The felt used for rubbing pads ought to be of the best grade obtainable to produce good work, for if the felt is coarse and stiff it will scratch and burn the work, and regardless of how often it is changed, felt of this kind cannot produce satisfactory results. It is an excellent idea and a paying proposition for a firm to have an extra rubbing machine on hand, for if one in use goes wrong, the extra one can be put in service and the work will continue with but a slight delay while the other machine is being repaired.—J. H. S.

Peerless Announces New Bulletin

Peerless Pnuematic Systems, Inc., announces a new Bulletin No. 29, covering large capacity pressure tanks in sizes up to 300 gallons, for use in spraying lacquers and vitreous enamels. These large pressure containers have met with immediate success and have been adopted by automobile manufacturers and other industrial concerns.

New Plant Going O. K.

The Armitage Varnish Co. are now in full production in their new lacquer plant adjoining their varnish and paint plants. The new lacquer plant is a four story building, contains about 25,000-sq. ft. of floor space, and is of steel and reinforced concrete construction. It has a capacity of 10,000 gallons of lacquer a day.

Without doing ANY rubbing at all

you can produce the finest rubbed effect with this flat finish. And if you just WILL rub, use this and beat the best any rubbing varnish ever did for your work. Sounds a lot, you say. It is a lot. But you sure will get it, using this

Johnson's Flat Varnish

Always dries out smooth; clear; speckless; lustrously glossy; and TRULY flat. For it has fully 15 per cent. more body than you ever saw a flat finish have till now. And it's as tough, durable and full-bodied as even the very best rubbing varnishes. Dries quicker, never is mealy or chunky; and it certainly does make a lasting job of work.

Suppose you order 5 Gallons Now—At the Drum Price

S. C. JOHNSON & SON, Racine, Wis.

UNDERCOATS ENAMELS FILLERS VARNISHES
LACQUERS STAINS POLISHING WAXES

Results Affected by Personnel

Foreman of Wood Finishing and Painting at the American Fixture Co. calls attention to the importance of having the right kind of workmen in the finishing department

By Edward C. H. Rottmann

IF THERE ever was a problem or a place where both the foreman and workmen alike should cultivate a serene state of mind, that place I believe is in the finishing department. The slightest friction on the part of either foreman or workmen is bound to show up, not alone in the workmanship, but in the production end as well.

Most assuredly the character of the artisan can always be seen in the finished product. It is the writer's opinion, that high-class finishing cannot be accomplished by a man, or a group of men of agitated or unsettled disposition.

Men of this type will upset the equilibrium of the entire finishing room staff, and I have seen cases of this kind prove very costly to production in the plant, not speaking of the unnecessary mental and physical tension inflicted on the personnel of the entire department.

Selecting Workmen

This type of men will not produce as much nor will the quality of their work be as high as slower, well balanced, workmen who are deliberate in their movements. However, it is obvious that the extreme of either of these two types should be avoided in selecting help for the finishing department. But to my mind, the ideal workmen are those who gravitate between these two points mentioned above.

Many a foreman who buys and uses high-grade finishing materials, does not get the results from their use that he has a right to expect, because of the lack of intelligence and co-operation on the part of some workmen. Expensive finish materials at present are not entirely fool proof, and unless very close supervision is given to the workmen, they are apt to upset production; this generally happens at a crucial time.

Again, some of the paint and varnish manufacturers hesitate to make good any claims against their goods because they know full well the unreliability of many workmen who pose as painters or finishers. These same makers of finish materials are always glad to stand back of their goods when they have confidence in the character of the men intrusted with the application of their products.

Desirable Workmen

It is my opinion that the worthwhile artisans are those who take advantage of their opportunities by reading and studying their trade journals, discussing problems, and pooling their thoughts with others of their craft and constantly are seeking after more knowledge.

Such workmen are apt to be steady, dependable employes, though by some they may be considered plodders. But we should not forget that the intelligent plodders, notwithstanding many obstacles, finally reach their destination.

A Real Two-Fisted Lacquer

No. 602-B

Put it to any test. Treat it rough! Handle without care. Watch it take punishment and come back, uninjured, for more.

Flat Wood Lacquer No. 602-B is not an experiment—it's a certainty—has proved its own merit. There isn't a better one. Eliminates rubbing; speeds up production. Tough mar-resisting surface; will not crack, shrink, check or peel. Dries with a clear transparent film.

Where an inexpensive finish is desired, this lacquer will save money and do a better job. Try it.

Send for Free Sample

The

ROCKFORD VARNISH *Company*

ROCKFORD, ILL.

New Rubbing and Polishing Equipment

The new portable outfit shown herewith is designed for rubbing and polishing finished surfaces or work in process of finishing, whether on wood or metal, with either wet or dry abrasive paper or with felt pads and pumice. The working head carries pads which are given a swift back and forward movement by power transmitted through an inclosed flexible shaft connected to a motor which is mounted on the sturdy portable stand.

A self-contained portable outfit which takes power through an extension cord that can be plugged into any electric light or power line.

The head weighs only 1¼ lbs., and is fitted with a convenient handle for the operator. In addition to the flexible shaft connection, the head also has connection for the attachment of a rubber hose through which water can be supplied as needed for use in connection with varnish or lacquer rubbing.

The inclosed dust-proof motor is rated at 1/3-h.p., 1,500-r.p.m., and can be supplied for either direct or alternating current. Ten feet of Biax flexible shafting of ½-in. core diameter, connects the motor with the rubbing machine head.

According to the manufacturer, the Biax Flexible Shaft Co., Inc., 136 Liberty St., New York City, this outfit represents the results of years of experimentation and tests by competent engineers, and rubbing machines of this make are now in satisfactory operation in many kinds of factories where a high-class finish is demanded on finished products made of wood or metal.

Peerless Represented in Detroit

Mr. C. W. Sanders, 732 Dime Bank Building, has been appointed District Manager of Peerless Pneumatic Systems, Inc., Chicago, for the Detroit Territory. A complete stock of Peerless Spray Finishing Equipment will be kept on hand in Detroit.

Publicker Succeeds Walker as Miner-Edgar President

Philip Publicker, president of the David Berg Industrial Alcohol Co., Philadelphia, has been made president of the Miner-Edgar Co., of New York City. He had been a member of the Miner-Edgar board of directors, and now becomes more actively associated with the company's affairs.

Mr. Publicker succeeds in office Dr. Henry V. Walker, who has resigned as president and a director of the Miner-Edgar Co.

Other officers of the Miner-Edgar Co. are now the following: Chairman of the board, Henry M. Miner; vice-presidents, W. R. Melville and H. T. Edgar; treasurer (acting), Harry M. Miner; assistant treasurer, Zealey Gerber; secretary, C. M. Mason; assistant secretary, Ross Miner. In addition to Mr. Miner, Mr. Publicker, Mr. Melville, Mr. Edgar, Mr. Gerber and Mr. Mason, the directors of the company are David Berg, H. C. McKenzie, D. R. Edgar, Frank Clauson, and Walter Williams.

Mr. H. E. Hall is general sales manager over all departments.

PERIOD FINISHES -OUR SPECIALTY

THE advantages of sixty years of manufacturing enable us to produce the finest varnishes for furniture.

We are glad to offer suggestions as to the right varnish for specific finishes and effects. :::: Send for detailed information and our technical department will give you the benefit of their experience.

PECORA PAINT COMPANY

4th St. & Sedgley Avenue
Philadelphia, Pa.

Established 1862 by Smith Bowen

Incorporated 1911

Choice of Automobile Finishing and Refinishing Materials

The choice of these materials involves not only the requirement of high-quality dependable goods, but of "balanced" materials which can be built into a thin covering of beauty and guaranteed endurance

By T. E. Moorefield

IN DAYS of yore it was necessary for each carriage painter to be the manufacturer also of many of his finishing materials. This is not necessary nor desirable in painting automobiles today, for the larger and more reliable paint, varnish and lacquer manufacturers have made careful studies of the requirements of the industry and have a full line of ready prepared materials especially made for the various coats used on automobiles.

Materials, Equipment, Experience

These manufactured products are produced from the best raw materials, gathered from the four corners of the earth and scientifically combined in the proper proportions for best results. Modern, uptodate machinery and manufacturing methods are used.

Men of long experience in making finishing materials for all purposes build their experience into the finishing products, to make them as easy working and practical as possible. Continuous experiments are carried on to improve each product, and long tiers of exposure fences are constantly filled with exposure panels to check up on the durability of the products.

The individual painter cannot expect to have accessible so many raw materials, nor the equipment and experience to combine them as well as men who do nothing, day in and day out, but make paint, varnish or lacquer products. Furthermore, the painter cannot manufacture any finishing material of a given quality at a lower price than he can obtain it from a reliable manufacturer, if he counts into the cost, the value of his time, his overhead, and such expenses as are incidental, in addition to the cost of the raw material.

Avoid Questionable Mixtures

It is very dangerous for the painter to do any appreciable amount of hand mixing of products, other than perhaps to make his own color varnish from ready prepared japan colors and clear rubbing varnishes. Of course, it is permissible for him to reduce each of his coats according to instructions from the manufacturer, but he should not substitute another reducer which may happen to thin better, for it may contain some ingredient that will not harmonize with the ingredients of the finishing material.

It is surprising that so few refinish jobs go bad when one considers that many painters make the mistake of mixing several brands of finishing materials

One Coat Lacquer Enamel

For Metal and Wooden Toys
and Hardware Specialties.
Durable and Economical.

Write us for a demonstration.

Nubian Paint & Varnish Company
Established 1879
1856 N. Leclaire Ave. Chicago, Ill.

when building up a finish. Some people make a practice of purchasing their primers, surfacing materials and succeeding coats from various sources of supply where they can obtain the best price, and they receive what they believe to be the best quality for their money.

Each individual material may be of good quality within itself, but an automobile finish is built up of a series of materials, and each one must dovetail and fit into the other like the various parts of a permanent building, or the ravages of time and the elements will quickly destroy it.

Unbalanced Finishes

For example, a primer may be a very good primer within itself but the drying time, oil content, elasticity and other properties may not be suited exactly to the surfacer and other coats which are applied over it. In the same way, the surfacer may be a good surfacer within itself, but it may be either too long or too short in oil content, too elastic or too brittle, or not otherwise suited for use over the primer or undercoats that follow.

The result may be that when expansion or contraction of the metal takes place under sudden changes of temperature, one or the other coats may not be sufficiently elastic to withstand the strain. As a result checks, cracks or other defects will form, and the entire finish will be spoiled.

It is bad enough to mix materials of different manufacture in finishing with color varnish, but the danger is even greater with the use of lacquer finishing materials because the undercoats, in addition to working well with each other, must withstand the solvent action of the lacquers applied over them; they must work in conjunction with the lacquer enamel to prevent defects showing up later.

It is my recommendation that each motor car manufacturer and each automobile refinishing shop purchase all finishing materials to be used on a given job from the same source of supply. Then the manufacturer can furnish the material for each coat of such a quality that it is well suited for its particular purpose and will still work in harmony with the other coats below and above it.

Some of the larger manufacturers of lacquers, paints and varnishes have complete systems from the metal out to the finishing coats. They have carefully designed each coat to fit in with all the others.

Doctor of Finishes

A number of the leading motor car manufacturers have come to realize that the "painting" of an automobile must be reasoned out along scientific lines and that a "Doctor of Finishes" is needed to diagnose and correct paint, varnish and lacquer troubles, just as a Doctor of Medicine is needed to diagnose and correct human ills.

Some of these concerns have turned over their entire finishing problems to reputable paint, varnish and lacquer makers. The makers of these materials should

LACQUERS for Autos

Extensively used, free from gum, uniform, reliable and economic. Pioneer lacquer makers who can satisfy your requirements. Write for prices.

Chas. Cooper & Co.
90 Worth St., New York
Works—Newark, N. J. Since 1857

Let's tread this path together

The path we mean is a path to better finishing results.

A du Pont Industrial Finishing Engineer is ready to work with you in solving the finishing problems in your plant. He is an experienced engineer, backed by the experience of the du Pont laboratories. He can be a real help to you not alone in prescribing the proper finish, but by getting right down to brass tacks and working out an economical system that starts with the preparation of the surface.

DU PONT

For information regarding the du Pont Industrial Finishing Service and data on du Pont products, write to, E. I. du Pont de Nemours & Co., Inc., Chemical Products Division, Parlin, N. J., Chicago, Ill., San Francisco, Cal., Everett, Mass., or Flint Paint & Varnish Limited, Toronto, Canada.

PAINTS, VARNISHES, ENAMELS, DUCO

be better qualified than anyone else to specify the type of goods to be used, methods of application and conditions under which they are applied and dried.

By following this procedure the proper materials are applied next to the metal, and the other coats are properly related one to another, so as to give good working conditions under production and, at the same time, maximum durability after the job is released for service on the road.

Staining Oak

Oak is a strong decorative wood that permits of more varied treatment than any other wood. It permits of more finishes, colors, stains and effects. The oak family of wood has also a great variety of growths. White oak, black oak, red oak, etc., each with their many varieties, all require different treatment, or at least they differ in appearance when the same stains are applied. That is, a panel of the black oak variety will not take the same as white oak.

White oak seems to be the best for fine finishing and quarter-sawed produces the most refined appearance and is the ideal oak for all class of finishes. Where oil stains will produce the color and effect desired, they are the most satisfactory. They are permanent, easily worked and matched in color.

Fine fumed effects cannot be produced with oil stains. This should be done with strong ammonia fumes blown into an air-tight room where the finishing woods are stored. Where the painter has to do it on the job, he usually fumes it with the brush or in other words, he coats the finishing lumber with strong aqua ammonia, 28 per cent being the best.

Many shades of a very rich brown are produced by applying a solution of bichromate of potash and can be made light or dark by using either a weak or a strong solution. Where it is desirable to retain the soft brown color thus produced without change, several coats of clear lacquer may be applied, or if a protective coat is not desired, simply wax and polish. Shellacing or oiling changes the color effect and gives a transparent depth, very beautiful.

For weathered effects, grays or even black can be made with acetate of iron, which we made with iron shavings and strong vinegar or sulphate of iron (copperas) dissolved in water. These can be used either weak or strong to get the desired shade. Oak stained with brown or gray as above may be filled with silex filler, colored with white or gray pigments and a very decorative effect produced.

(From a paper read by L. B. Titzel at the Philadelphia Convention of the I. A. of M. P. & D.)

Zapon Issues Brochure on Lacquers and Lacquer Enamels

From The Zapon Co. of New York City, comes an attractive and interesting brochure of twenty-six 8 x 11-in. pages bound in heavy blue cover stock, with one projecting edge labeled crosswise for convenient reference in a filing case. The title is "Architectural Specifications" with a qualifying sub-title, "Odorless Brushing and Spraying Lacquers and Lacquer Enamels for Finishing Interior Surfaces."

Subject matter inside includes information on pyroxylin base finishing materials and finishes, descriptions of Zapon's "O.B.S." lacquers and lacquer enamels, recommendations and instructions for the application of the above named materials, and suggested specifications on lacquer finishes for the guidance of architects and users of architectural finishes for wood, metal, plaster, composition fiber board, cork tile, linoleum and cement surfaces.

Can You Do This With the Varnish You Are Now Using?

A DAVENPORT TABLE MANUFACTURER IN N. CAROLINA DID THIS

They spray coated their product in the morning—six hours later sprayed second coat—following morning rubbed with electric rubber.

Seven hours later they put two pieces together with corrugated board between them, laid pieces on floor—rolled 450 pound drum on them—allowed to stand this way over night, and found on examination (only 48 hours after first coat of varnish was applied) only slight marks on the surface, which were immediately removed by slight hand rubbing.

They are convinced now, that for positively the last word in Varnish making MARIETTA Varnitro COMBINING SPEED & QUALITY IN A PRACTICAL VARNISH PRODUCT (PATENT APPLIED FOR) is unexcelled.

Never in the history of the Paint and Varnish Industry has there been such an outstanding finishing product developed—for Varnitro is really a "two-in-one" finishing product, which combines all the best working characteristics of both a varnish and a lacquer without the disadvantages of either.

THE MARIETTA PAINT & COLOR COMPANY

Executive Office and Factory: Marietta, Ohio
Southern Factory: High Point, N. C.

Use this coupon, and be assured of finishing economy.
Marietta Paint & Color Co., Marietta, Ohio.
We are interested in Varnitro. Please ship.....gallons at drum price—also panel.
Company.....
Address.....
IF—10-26

Equipment for stain dipping, draining and overhead carrying.

Stains for Different Finishes

Water, spirit and oil stains all have their merits and uses, as is revealed in this article which gives information on how, when and where to use certain stains for satisfactory results

By C. F. Worlendar

THERE are three general types of stains for use on work, namely, water stains, spirit stains, and oil stains. The water and spirit stains are usually obtained in powder form, while some of the oil stains are obtained in powder form and others in liquid form. Water stains are preferred by many finishers and they are widely used for fine work because they are fast to light and permanent in color, while some oil and spirit soluble stains soon fade upon exposure to sunlight. Furthermore, water stains produce uniform tones and thus bring out the full beauty of the wood on which they are used.

The chief drawback to the use of water stains is the fact that they raise the grain of the wood, producing a rough surface which must be sanded before the finishing operation proceeds. To aid in this sanding it is customary to apply a wash coat of shellac after the stain is dry, this wash coat being made by adding 8 to 10 parts of denatured alcohol to 1 part of 4-lb. cut shellac. When this is dry it stiffens the fibers and allows the sandpaper, either No. 0 or 00 garnet, to easily cut down to a smooth surface again.

"Only two things are necessary to the highest form of success in a manufacturing business. One is the 'know how' and the other is the determination to make it as good as it can be made. I might call this the skill and the will. Not all good finishes are made by the Murphy Varnish Company, but all finishes made by the Murphy Varnish Company are good."

Amazing Quick Drying Materials for Wood Finishing

The Murphy Varnish Company is equipped to furnish manufacturers with a full line of pyroxylin finishes which will enable them to employ these desirable materials throughout the entire finishing schedule of any job.

These materials comprise the sensational Murphy Kauriol Wood Preparation, Murphy Period Finish, Murphy Flat Lacquer, Murphy Clear and Colored Lacquers for both spraying and brushing, Murphy Waterproofing Mixing for waterproofing shellac, and Murphy Pyroxylin White Undercoating.

The use of these materials cuts finishing costs. For instance, new wood finished with one coat of Murphy Kauriol Wood Preparation is ready in twelve hours for a coat of clear lacquer. The ordinary steps necessary to bring a job to this stage would take two days or more and involve four operations.

One manufacturer writes that the use of Murphy Kauriol Wood Preparation has had the effect of doubling the size of his factory! We should be glad to have you write us to send you a practical demonstrator to show you how he can help you save time, storage space and labor costs in your plant.

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Spirit Stains

Spirit stains are generally conceded to be the least fast to light of all stains, but where extra quick drying is desired they are sometimes the logical stain to use, especially where the object is not exposed to light. Spirit stains, on account of being dissolved in alcohol, which always contains some water, raise the grain of the wood and it must be sanded in much the same way as where water stain is used, before the finishing operation proceeds.

The principal use of spirit stains in the furniture industry is for over-toning or color patching to even up the color of the wood. Brown and black are the usual shades of spirit stains used for this purpose, and in most cases the stain is mixed with a small amount of shellac (as a binder) before it is put on by spraying or brushing.

Oil Stains

From the standpoint of fastness to light, oil stains rank next to water stains, the red shades fading much quicker than the brown or black ones. Oil stains are quite penetrating and produce very clear tones. They do not raise the grain of the wood and for certain purposes they are finding considerable use because of the fact that it is not necessary to sand the wood after staining, before filling.

It is usually best to use a coat of shellac over oil stains—about 2 lbs. to the gallon of alcohol—to help prevent them from bleeding into the varnish or lacquer coats that are applied over them. Even small quantities of oil stains in varnish or lacquer will slow up the drying considerably, and if too much of the oil stain gets into the varnish or lacquer the finish will be very brittle upon drying.

For Lacquer; Varnish; Shellac

For a varnish finish either of these three classes of stains can be used, although, as mentioned before, the water stain is quite a favorite among many finishers. For lacquer work, only water stains should be used, for they are the least soluble in the solvents used in lacquer and they dry out more thoroughly than oil stains.

Since shellac and most lacquers contain considerable quantities of solvents for spirit stains, it is not advisable to use spirit soluble stains under either lacquer or shellac, because of the danger of bleeding. On the other hand, where it is desired to tint shellac or other alcoholic materials, spirit soluble colors are the proper ones to use.

Although oil stains are not wholly soluble in alcohol, there is usually sufficient quantity soluble to bleed the stain when shellac is applied over it. This fact is sometimes made use of in clearing up the tone of the color, as a little bleeding frequently makes the shade a brighter one. Some oil stains bleed so badly, however, that they go through the coat of shellac into the varnish or lacquer which is applied over them, frequently being so bad as to spoil the work.

Oil stains, except certain standard shades of oak and walnut which are of black and brown casts, should never be used under lacquer, as the stearic acid and

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other constituents are likely to precipitate the gun cotton, causing blushing. Furthermore, it frequently happens that lacquers will not dry promptly and will not adhere to the wood when used over oil stains. To be safe in using lacquers, stick to water stains.

How Long Stains Dry

It is not possible to give any definite instructions for the length of time to dry stains before proceeding with the finishing operations, because the humidity of the atmosphere, the type of stain, the kind of wood on which it is used, and various other matters will have a great bea ng on this. Where water stain is used, to be safe, at least 24 hours should elapse between the time the stain is applied and the filler is put on.

Spirit stains dry more quickly and can be coated over in eight hours or so, under normal conditions. Oil stains, however, dry quite slowly, especially in the bottom of the pores of the wood, and they should never be coated over in less than 24 hours; for extra good work the oil-stained surface should have 48 hours' drying before the first coat.

Weather-Proof Coatings

It is an interesting fact that in carrying on with research efforts on the weather-proofing of gypsum, used extensively for plastering, the Bureau of Standards has included experiments with a number of weather-proof coatings made of material familiar to the industrial finishing trade.

Gypsum, which makes a satisfactory plaster for interior work, has not proven satisfactory for exterior work because it is slightly soluble in water. The idea of the research is to make it available for a wider market in exterior work, if some waterproofing qualities or coatings can be added.

The first efforts in this research work included covering the surface with water-proofing coatings. In these experiments it was found that paraffin, stearic acid, beeswax dissolved in benzol, Cammarone resin, and certain weather-proof coatings obtained from the open market, give fairly satisfactory results.

Other coatings, however, such as tung oil, varnish, bituminous paint, chromate paint, cellulose, acetate, fish and hide glues, beeswax and certain waterproof coatings obtained from the open market, failed to give satisfactory results.

The final trend of the research in this case is toward combining other materials with the gypsum, and the use of heat and pressure in casting gypsum. This will probably be the line of effort chiefly followed, but it is interesting to note that the experiments have proven favorable results with some of the familiar finishing materials.—J. C. Taylor.

Oil or gas lights should not be permitted near spray booths at any time.

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Issued monthly. Distributed exclusively to executives and foremen finishers in all kinds of industrial plants where finish coats are applied.

OCTOBER, 1926

Utilizing Your Space More Nearly 100 Percent

In conjunction with the finishing process in every kind of establishment, provision must be made for drying the freshly coated articles. Drying may be accelerated by employing ovens or kilns, or the articles may be placed on the floor or in racks to dry naturally with no artificial increase in temperature or ventilation. In any event, space must be provided in which drying can take place. A problem with many manufacturers is how to utilize space so provided to the best advantage.

The problem is particularly accurate in those establishments where the rapid drying finishes are not as yet in use; many of the varnish and oil enamel finishes are being allowed from 24 to 48 hours to dry when no artificial heat or ventilation is employed. Even with the development and adoption of more rapid drying finishes that can be offered at low cost, we still have the problem of utilizing the necessary drying space more nearly to its full extent and possibilities.

Where articles are of a size, shape and weight that permits it, much of the upper portions of a drying room can be utilized through the use of stationary or portable racks several decks in height, or through the use of both overhead and surface conveyors and possibly conveyors running along at intermediate heights. Such articles as heavy furniture and pianos could be placed on low trucks and elevated to a balcony where they could be parked in considerable number to dry. There are some interesting possibilities along this line and they are of sufficient importance to warrant thorough investigation.

Important Conventions

By the time this issue of INDUSTRIAL FINISHING is off the press and in the mails, one of the most important convention weeks in the history of the industry will be in progress. During the week of October 11-16, at Washington, D. C., occur annual conventions of the National Paint, Oil and Varnish Association, the National Varnish Manufacturers' Association, the Paint Manufacturers' Association of the U. S., and the meeting of the National Federation of Paint and Varnish Production Clubs.

According to the scheduled programs, business sessions and social events will make this a week of great activity for the visitors in Washington.

Among other things there will come up for discussion, and probably decision, a proposal to consolidate the N. V. M. A. and the P. M. A. of the U. S., with the object of eliminating duplication of effort to the end that the great work they have in hand shall be continued without waste of time or energy.

Read the Advertisements

Much that is new and improved in the way of finishing materials and equipment has been recently developed and is being announced in the advertising pages of INDUSTRIAL FINISHING; also many concerns who are advertising but who do not happen to be stressing the newness of certain products at this time, really have materials or equipment that are new and useful to many users of finishes. These messages to you contain information of interest and value and many of them will suggest ideas for the improvement of your present methods and practices.

Every advertiser is a specialist in his line and his services and recommendations are yours for the asking. It is to his interest to help you and make you a permanent friend, rather than to unload onto you something unsuited to your needs and thereby court the distrust and possibly the enmity of you and your business acquaintances for all future time.

Reading advertisements, writing for further information and literature, sending for samples or trial orders and keeping your copy of INDUSTRIAL FINISHING at hand for ready reference—this will keep you in touch with the latest progress and developments in finishing, which today occupies such an important place in the manufacture of an immense variety and volume of products.

Air Compressor Installations

Many concerns that use compressed air for spraying finishes, find it advantageous to use a dual installation of compressors and tanks with a hook-up that will permit of stopping either compressor when the demand is low or cutting out either tank to make possible inspection or repairs when the occasion requires it. When there is a considerable variation in the demands for air, the dual installation is recommended, but where the demand is fairly constant, a single installation of adequate capacity has many merits that recommend it.

The latest air compressors, tanks, and accessories have been improved to the extent that the equipment is dependable for long steady service, and the need of having reserve equipment for use in emergencies is less apparent than formerly. However, a unit that takes care of this contingency and at the same time serves to supply air for cleaning other departments of the plant at intervals and to even supply air at times for operating some production equipment, is the portable compressor unit.

A typical portable outfit consists of a motor-driven compressor and air drum mounted on a low truck. This outfit can be moved to various parts of the plant and when the extension cord is plugged in at a socket station, the equipment is ready for immediate service. There is a real need for portable air compressors in many wood-working and metal working establishments.

A fluid hose, metal-lined, is very durable and will give the longest possible service when properly handled. Care should always be taken to avoid sharp bends, or leaving it on the floor where heavy trucks can pass over it and thereby crush the metal lining. The metal lining is impervious to all painting materials and with reasonable care it will last indefinitely.

Sanding, Filling and Puttying

Much useful information is revealed in this article about the sanding, cleaning, filling and puttying of both wood and metal surfaces

By E. Perry

IN SANDING natural wood, always sand with the grain—never across the grain—and if an extremely fine finish is desired use a little dry silica or silex with No. 00 or 0 sandpaper.

Lead poisoning seldom occurs from the use of white lead ground in oil, but the dust arising from a sandpapered white lead surface, when taken into the lungs through the nose or mouth, is extremely dangerous. Therefore, in sanding lead surfaces it is advisable to do wet sanding with the regular waterproof papers and use a wet chamois to clean off the surface, rather than to sand dry and agitate the dust with a dry duster brush. No. 00 or 0 steel wool also may be used in place of the sandpaper if desired, and this can be worked quite well with water.

Treating Metal

Metal work usually requires more or less harsh treatment; it may be cleaned with a wire brush, with sandpaper, by sand-blasting, or by pickling. The individual painter and finisher is obliged to utilize the first two means, but in the large factories a sand-blast is generally provided and is the most efficient method known.

Pickling is only used on "knock down" material which can be put into the pickling tanks. The usual "pickle" consists of one part of sulphuric acid into seven parts of water, although stronger and weaker solutions are occasionally used, as also are other types of solutions for special work, as already thoroughly described in a past issue of INDUSTRIAL FINISHING, by one of its contributing writers.

After the "scale" from iron or steel has been removed, the article may be rinsed in clean water to remove the acid and then allowed to dry; when dry it should be further washed with benzine, after which it is ready to paint. An improvement on the foregoing consists in passing the metal through a lime water bath after rinsing off the acid, then allowing the lime to dry on the surface and simply dusting off the powder before painting.

Abrasive materials like sandpaper, steel wool, and sand used in the sand blast all remove rough particles from the surface but do not fill the uneven spots on metal nor the open grain in wood, consequently fillers are used for this purpose.

For metal work an "iron filler" usually consists of white lead, whiting, keystone filler, and sometimes a little fine pumice, ground in boiled linseed oil and japan. It is a soft putty that may be applied with a piece of sole-leather or with the wide-bladed filling knife. Occasionally it is thinned with benzine and several coats are brushed on in similar manner to rough-stuff. The regular "rough-stuff" familiar to the automobile finisher is somewhat similar in composition but con-

Vitraloid Wood Lacquer No. 2546

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May we send you a generous no-charge sample? Try it out yourself and see how adaptable it is to your schedule. Write us today.

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tains rubbing varnish to toughen it so it will withstand the surfacing down with the pumice block.

Treating Wood

Fillers for wood, that is, good fillers—are readily mixed by the finisher; it is silex mixed to a paste with a mixture of equal portions of boiled linseed oil and drying japan, and this stiff paste is thinned to creamy consistency with turpentine and applied with a brush. Of course, this is for natural finish, and the base for colors required by various woods, which demand additions of Vandyke brown, rose lake, etc., according to the particular shade necessary on the job.

For Floors and Walls

Cracks in floors are usually filled with prepared "crack filler," of which there are two types on the market. One of these is an oil compound, sometimes utilizing corn starch for the filling ingredient, but which is generally considered inferior because of its frequent tendency to dry and shrink loose in the cracks, therefore the preferable recommendation is silica, plaster of Paris, and wood flour mixed to a thick paste with approximately equal quantities of boiled linseed oil, drying japan, and turps.

The other type is sold as a dry powder and must be wet down with enough water to form a stiff dough, and is so prepared only when ready to immediately use it on the job. It is an intimate mixture or blending of 10 parts of quartz silex, 2 parts of plaster of Paris, and 1½ parts of dextrine.

Cracks in plastered walls can be filled with plaster of Paris made into a thick putty with water; but a harder and tougher composition is made by mixing together about 12 parts of white alabastine and 5 parts of wheat flour, forming a stiff putty with the required amount of water.

Putties for Wood, Metal

Putties for wood and metal have a base of common whiting. Ordinary glaziers' putty consisting of whiting, marble dust, oil foots, etc., is low grade and unsuited to fine work. House painters' putty of good quality is made in a chaser, of 40 to 50 lbs. of dry whiting with one gallon of pure raw linseed oil. Carriage putty usually contains white lead in addition to the whiting, and also a little rubbing varnish and japan.

Putties for metal are quick drying and eventually become exceedingly hard. The contained pigments are whiting, silica or siliceous material like keystone filler, iron oxides, and white lead; the vehicle portion is made up of boiled linseed oil, japan, and a small amount of varnish.

The main trouble with putty, either on wood or metal, is that it shrinks on drying under certain conditions and under other conditions sometimes expands. If a little flour paste or paperhangers' paste be mixed with dry whiting to form a stiff dough, and this dough is then worked into any of the regular putties, it will greatly reduce the shrinkage and expansion.

To retain the soft condition of putty and prevent the dry outer crust which forms from exposure to air, the putty should be kept covered with water.

Editor's Note: Throughout the foregoing article considerable has been dealt with in the way of

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generalities because its mission is mainly to prompt the novice or the general finisher, whose experience has not yet covered many of the points brought up. Further specific data can be given in connection with any of the matters mentioned herein and in other articles by the same author, should any readers be sufficiently interested.

Mat and Burnish Gilding

On the subject of gilding, I am now writing of the old school. Real gold leaf laying is an art and study by itself, as in the process of application, there are at times quite a few obstacles to overcome. I will try in as few words as possible to explain them. The following methods have been used in the United States. First, let me explain that in "mat" I refer to sunken parts and in "burnish" I refer to highlight or relief.

1—Glue size wood with rabbit skin glue.

2—Apply three coats of whiting.

3—Sandpaper.

4—Put on two coats of yellow clay.

5—Sandpaper and polish.

6—Oversize all with glue.

7—Gold Leaf laid on mat parts with water and alcohol.

8—Burnish parts, blue, clay and gold leaf, laid the same as mat when dry; burnish.

9—Shellac parts where gold cannot be laid in water, and cut in with gold size, applying gold thereon after same has set.

The article is then ready to finish off. Some use shellac and others generally use ormolu. The proper methods of mixing the various ingredients is where the difficulty arises.

Note: By ormolu I refer to a patina finish. It is a French process of protecting gold, and keeping it soft and mellow. The following is the formula:

French varnish, ¼ pint.
Gum benzoin, 3 grams.
Dragon's blood red (just to color).

The glue must be of such strength that it will adhere to the wood. The whiting used as a foundation must be strong enough to bind with the glue. Preceding clays must also bind with the whiting. In other words, the bottom coat must be stronger than the top. It is hard to explain the reaction of the various materials without one having some technical knowledge of same.—L. Hess.

James B. Day & Co. Acquires Larger Quarters

The six-story building of 1872-1874 Clybourn Ave., Chicago, has just been taken over by James B. Day & Co., manufacturers of shellac, enamel, stain, wax, fillers, etc. The building, which has a floor area of 90,000-sq. ft., faces on Clybourn, Clay and Marcy streets and has an abundance of daylight on all four sides.

Exceptionally large sales of wood finishing materials during the past year make expansion necessary and the new building will enable the company to increase its volume materially.

An eight-car switch track of the C. M. & St. P. Ry. serves the property, providing for economical handling of shipments.

The Day Company was founded 25 years ago and during that time has occupied several locations. Its building on Ohio Street was outgrown several years ago, making it necessary to take over an additional building nearby. The consolidation into one location with more space will enable it to better serve its customers all over the country. Manufacturing at the new plant will start about January first.

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Specifically describing the latest practice in rubbing and cleaning lacquered surfaces. Preventing blooming of lacquer finished surfaces.

Finishing Radio Cabinets—II

By R. L. Masterson

AS TO the formation of the bloom on the work after rubbing, this is evidently a case of apparently removing the rubbing oil but actually not getting it all off. The use of the linseed oil in the cleaning solution is questionable, as this no doubt deposits on the surface a thin film of vegetable oil, which gathers dust, traces of pumicestone slush, lint from the wiping cloths and other foreign materials, as it dries. The purpose of the lampblack in the mixture is not entirely clear unless it is to aid in hiding any scratches in the work. There are several cleaning methods which can be recommended in preference to the one mentioned.

Rubbing is Scratching

Although the finishing schedule indicates that the lacquer coats should be sufficiently dry to give no grayish trouble from rubbing, it is well to remember that lacquer is frequently abused in the rubbing process in many plants. Rubbing is nothing more or less than the process of putting millions of scratches in the surface, as can be seen by looking at a rubbed surface under a magnifying glass.

A dried lacquer film is very similar to a sheet of celluloid, and if the scratches left by the rubbing process are too coarse or applied without the use of sufficient rubbing liquid, the film will be left with a slight greyish cast. Also, if the lacquer is not as thoroughly dry as it should be, due to a high humidity of the air, low temperature of the air, too frequent application of coats, not sufficient drying time, or any similar cause, the scratches will be more pronounced and because of the scratched condition it will be more difficult to thoroughly clean off the rubbing oil. There is a slight tendency for a small quantity of the rubbing oil to be absorbed by a lacquer film that is not thoroughly dry, and this will also make it very difficult to completely remove the oil after rubbing.

In either case, if all of the rubbing oil is not removed a thin

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The safest way to insure a better finish is to install Paasche equipment throughout. Then you know that every unit has been engineered by specialists in air finishing, and that the assembly is certain to work together harmoniously. The finisher has no trouble getting results with Paasche rubbing machines and spray finishing equipment.

Let us show you the advantages of Paasche equipment. You will find it not only insures economy in your finishing room, but is also a vital factor in improving the quality and originality of finish on your product, which is certain to lead to easier sales.

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film of it will be left behind and this film will contain a small quantity of pumicestone slush, left from the rubbing operation. As long as the thin film of oil is on the surface the finish will look clear and bright, but when the small quantity of oil evaporates, as it eventually will, the slush shows up gray in the scratches, where it has not been removed, and gives the appearance of a bloom on the work.

De-Bloom Rubbing Oil

Even if the surface is perfectly dried and properly rubbed there is a tendency for this film to form later if the rubbing oil contains too much grease, or has a purplish cast, or bloom in the bottle. Oil that contains considerable grease cannot be easily wiped off the work and when it finally evaporates it allows the small quantity of pumicestone slush to show up as a gray cast. Many finishers are using special de-bloomed rubbing oil which does not contain heavy greases and which can easily be wiped off clean and dry.

There is still another cause of blooming which may be responsible for the trouble in this case. As the rubbing oil is wiped off with any kind of cleaning solution, the rags collect a small quantity of the oil. If the rags are not changed frequently, all of the oil will not be removed from the surface and the blooming trouble may appear.

Cleaning Final Finish

As for cleaning preparations, there are a number of these being used. A weak solution of a mild, neutral soap in water is sometimes used. Others follow the old time automobile painting custom of adding a small quantity of benzine or gasoline to water, whipping it together thoroughly and using this to clean up the work. A mixture of vinegar and naphtha is sometimes used. Many finishers use a wax solution and nowadays quite a few are using furniture polishes of different kinds to remove the oil, but not rubbing the work with the polish enough to materially increase the luster.

The Latest Practice

It is fast becoming a common practice, where lacquer is used as the finishing material, to take no particular pains in removing the rubbing oil immediately after the rubbing operation, but to wait until the goods is being packed for shipment. In other words the rubbing oil is merely wiped off with dry rags after the rubbing operation and sent through the other operations before reaching the shipping room.

By this time practically all of the oil has evaporated and what little may be left is easily removed along with finger prints, traces of pumicestone, etc., by going over the work with a little polish just before packing. This entirely eliminates the bloom, since the thin film of oil left on the work has had a chance to evaporate before the final cleaning operation; it also has the advantage of placing the work in the shipping container free from greasy finger prints, etc., at the same time requiring no extra outlay of time or labor.

Blooming Less Frequent

A year or two ago, when lacquers were not so well understood, this blooming trouble was more frequent, but since the users have learned to understand the causes of blooming on lacquer more completely, the trouble is

You May Be Satisfied

but are you really getting the best finishes?

When you adopted mechanical painting equipment to finish your products, you were well pleased with the improved appearance of the finish, and the greater speed with which your finishing work was done, and the lower costs. Maybe you are still satisfied with the results you are getting. However, in all probability you can even get better finishes than those you are getting now, and at lower cost and with greater speed.

Almost invariably when we come in contact with manufacturers who are fairly well satisfied with the results they are getting and they try the Matthews Finishers Gun and Equipment, they are able to get much better finishes at a substantial reduction in costs.

Some of the largest manufacturers in the country have had this experience with Matthews Mechanical Painting Equipment. Several of the leading paint manufacturers after using all other makes, standardized on Matthews Equipment with which to demonstrate their various finishes and surface coatings. You no doubt will have this same experience after you try the new Matthews Finishers Gun and Equipment. From the standpoint of good business, investigate. You will be under no obligations, and you will be the sole judge.

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very infrequent today. If the lacquer is thoroughly dry, if the right abrasive and the right rubbing liquid are used (the latter in proper proportions), if excessive pressure is not used in rubbing and if the oil is thoroughly removed after rubbing, this bloom or grayish overcast will not appear.

Whenever it does appear it is not in the lacquer film itself, but is a surface condition, unless it is a decided milky white, in which case it is due to blushing. Blushing always appears before the lacquer is dry, however, while blooming appears only after the work is rubbed, and it is therefore easy to distinguish between the two troubles.

Salesman's Suggestion Saves User $1.00 a Gallon

A small trimmer for the printing trades was being finished by giving it one coat of air-drying black enamel. This was a hand operated device that weighed some 9 lbs. and, from the nature of the work involved, it was necessary to put on the coat after everything else was done. The factory was making 30 to 50 of these trimmers a day, and was reasonably well satisfied with the method of finishing.

These devices were painted by brushing, because this was the only way it could be done without smearing surfaces which had to be bright. The workman placed the freshly coated units in rows where they were allowed to stand until the following morning; then they were hard enough to handle carefully and take to the stock room.

It was admitted, though, that the last of the trimmers enameled were none too hard in the morning and that the luster was dimmed by the touch of fingers. But this was accepted because the finish coating was a "selling coat" only, not being intended to retain its brightness after the tool had been in use a few days and had been thoroughly spotted by inky hands.

The concern had been paying $1.95 a gallon for the black enamel, in the gallon cans, which had proven best for their purpose. One of the country's leading specialists in metal finishes had recommended this enamel as the best air-drying coating they knew for the purpose and, had it not been for the visit of a paint salesman, the work might still be going on in the old way. This salesman represented one of the best known paint houses—one that sold them considerable paint for building maintenance, and he brought up the matter of industrial finishes after he had settled that of exterior coating.

The factory manager expressed surprise that this paint company knew anything about industrial coatings but he willingly showed the salesman their products, among which was this trimmer that was being enameled at the time. The salesman considered the problem from its several angles and finally agreed that the present method was the best, though there does exist a prejudice against brush work as a modern method. Casually, he mentioned that his people could furnish the same grade of japan and he asked for the price they were paying.

"What! A dollar ninety-five for japan?"

He couldn't believe this, but the manager showed a bill for it.

SPRACO

The Universal Gun

Read what a territorial representative of one of the largest paint manufacturers in the world wrote a friend who had advised him to buy a SPRACO Gun—

"I am taking this opportunity of thanking you indeed for your suggestion, 'try out the Spraco Gun'. Had I written you before, I would have been unable to tell you how successful my work has been, using this masterpiece.

"I have not used every make of Gun, but have used five other makes, and in each instance have found two things. First, to shoot a solid wet coat of heavy body undercoater, they would choke and had to be cleaned. Second, other guns required Enamel to be put through much heavier to get evenness and if thinned too much, seemed to sag, through no atomization of thin material.

"With my Spraco, I can shoot anything and anyhow, also a fog coat goes on every time flattening out like glass.

"Thanking you again for this kindness and advice, I beg to remain."

What a SPRACO Gun has done for others it will do for you. We stand back of SPRACO Products' performance, service and advertised claims.

Ask for Bulletin 103

Spraco Painting Equipment Company

Sole Manufacturers

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Sales and Service Branch Offices:

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This proved enlightening as it read "Air Drying Black Enamel". His suggestion then was a strong one—"Use japan instead and save $1.00 a gallon." More than that, he suggested that they dip these devices in gasoline before coating, thereby washing off any grease or particles of dirt on them or in the air. He pointed out certain roughnesses in the existing finish that came from this and the action of the enamel.

The manager ordered a sample gallon to test out. Japan is what the concern uses now, for it does so much better. The present finish is better and harder, it does not look picky where the brush coat is put over cold-drawn steel pieces, and the material acts better when it is being brushed.

Japan is a gum color instead of a pigment, as in enamel and paint, consequently it flows and dries better under such conditions. The company now racks the trimmers five hours after they are japanned, if necessary.

These savings and improvements are due to giving a salesman the benefit of the open mind, he chancing to be better informed than the salesman for the specialty house which had formerly sold the concern.—D. A. Hampson.

Finish Material Imports

Janet H. Nunn, of the Far East section of the Bureau of Foreign and Domestic Commerce, at Washington, has compiled the figures for a special review of the first six months trade with the Far East. That is from January to June inclusive of 1926. Among the items of particular interest to the finishing industry are the following imports:

From China, wood oil; 33,936,000 lbs., worth ---------- $3,623,000
From India, shellac; 14,716,000 lbs., worth ---------- $6,068,000
From New Zealand, Kauri gum; 2,924,000 lbs., equal to or valued at ---------- $540,000

The imports of wood oil for the first half of this year were about 15,000,000 lbs. less than for the first six months of 1925. On the other hand, the imports of shellac ran about 6½ million pounds heavier than for the first six months of 1925, while the Kauri gum imports were about 500,000 lbs. in excess of the first six months last year. This would indicate a noticeable falling off in wood oil imports unless meantime there has been a sharp increase during the later months. —T. C. J.

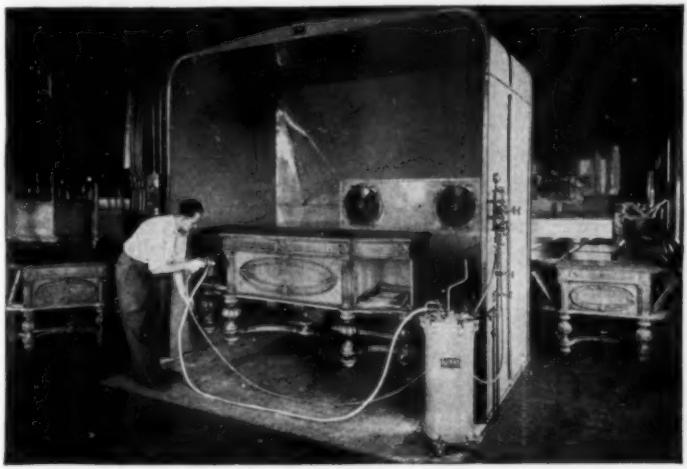
To obtain perfect results with a spray gun, perfect atomization is essential, thus permitting the fine particles of varnish, lacquer, etc., to knit together. To this end the greatest care should be exercised to keep the component parts of the gun clean to prevent clogging.

Announces Flat Duco

According to E. I. du Pont de Nemours & Co. the new flat Duco has been brought out to remove the necessity for the user of Duco to rub the legs and sides of furniture in order that dull-rubbed tops might not present a marked contrast. Flat Duco gives the desired effect without rubbing. It can be applied to give any degree of gloss desired by mixing with varying quantities of clear Duco.

Zapon's New Branch

The Zapon Company, 247 Park Avenue, New York City, manufacturers of Zapon Lacquers and Lacquer Enamels, announces the opening of a new sales office and warehouse at 547 Greenwich St., New York City. This sales office and warehouse has been opened to facilitate service in the Metropolitan district. Mr. H. W. McGovern, who is well known in the metal, toy and doll industries, is in charge of this office and warehouse.



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Using Shellac in Wood Finishing

Reviewing many uses for shellac in wood finishing and calling attention to several interesting shop kinks in connection with its use

By A. J. Patterson

PREVIOUS to priming woodwork it is customary to kill the knots by coating them with shellac varnish, therefore the following pointers in regard to shellac varnish may be useful to some finishers:

Shellac is made by dissolving from 2 to 8 lbs. of lac or gum in a gallon of denatured alcohol, according to the thickness or body desired; usually the 4 lb. cut, that is 4 lbs. of lac per gallon of alcohol, is the one most commonly used for general purposes.

Keeping Shellac

Shellac is preserved best in wood, glass, or earthenware containers; if kept in tin during any length of time it turns dark brown or black. Shellac which has become discolored in this manner may be restored to its original color by bleaching with oxalic acid.

One-fourth ounce of pulverized oxalic acid in one gallon of shellac varnish and vigorously shaken or agitated will dispel the black color, but do not exceed this amount of acid or the varnish will set too quickly, meaning that it will work "short". To prevent discoloration of shellac varnish in tin containers, dissolve ¼-oz. of pulverized borax in two fluid ounces of glycerine and add this to a gallon of the varnish.

Treating Shellac

If the shellac varnish has been made with wood alcohol, and works "short" or sets too quickly as often happens, mix a teaspoonful of melted lard into each gallon of varnish.

To prevent "frilling" or the wavy appearance of shellac varnish often caused by moisture or a change in temperature, mix one-half to one fluid ounce of oil of lavendar, oil of cedar, or other essential oil with a gallon of varnish.

To increase the luster of shellac varnish, thin 2 to 4 fluid ounces of Venice turpentine, or Canada balsam, with an equal amount of alcohol, and add this to a gallon of the varnish.

To impart to white shellac varnish any desired transparent color, dissolve one-eighth ounce of any spirit soluble aniline dye in two fluid ounces of glycerine, and then add sufficient of this coloring matter to the shellac varnish.

The affinity of alcohol for water is so great that if shellac varnish is left open to the atmosphere, it will absorb sufficient moisture to precipitate part of the dissolved gum, particularly during a rainy season. This difficulty is more pronounced with white shellac, and the defect is readily apparent by the "milkiness" of the applied varnish, especially in two-coat work.

Prevents Milkiness

Every furniture finisher should become familiar with a method for overcoming a shellac finish which shows this "milkiness" due to atmospheric influence. Procure grain alcohol, if possible,

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But to assure the success of even a modern spray gun, you must have a Quincy to furnish the air. Clean, dry air at a steady, even pressure, and a paint job to be proud of are the results if a Quincy is used. Many of the leading spray gun manufacturers have selected Quincy Compressors to complete their paint spray equipment. Demand a Quincy and there'll be a demand for your service.

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and with a camel hair brush draw the alcohol over the work so that the shellac finish is moistened, but do not brush back and forth. The idea is simply to redissolve the congealed particles and cause the varnish to again resume a clear condition. The work gone over in this manner may have to be rubbed after it has stood overnight, which can be done with fine pumice, soft felt, and rubbing oil, being careful to not rub up the finish.

Elastic Shellac

To make shellac varnish or any other spirit varnish pliable or elastic enough for coating paper, leather, cloth, etc., so that the varnish will not crack when the material is rolled or bent, add to one gallon of the varnish from 1 to 4-oz. of camphor gum and shake or agitate until the gum dissolves. Generally 2-oz. of the camphor is sufficient, and an excess of this gum renders the shellac exceedingly soft.

Reverting to the first paragraph of this article; the shellacing of knots has been the accepted method for holding back the resin in the wood; however, it never has been a positive preventive. Mr. Walter K. Schmidt of Grand Rapids recommends a novel method as absolutely reliable. A blow torch is used to heat the knot as hot as it will stand without burning. The heat draws out the rosin which is then washed off with turpentine and linseed oil. By this process the resinous matter is actually eliminated, therefore shellac is not needed.

Finally, on the subject of shellac: use thin shellac varnish; two coats of thin shellac is better than one heavy coat; and steel wool is preferable to sandpaper for smoothing the surface between coats.

Rosin for Varnishes

Rosin, when compared with the fossil resins or copals, is an inferior resin for varnish making purposes, in some respects, but it plays an important part in the industry and some excellent varnishes are made from it.

In the privacy of his own plant, the varnish maker incorporates this resin into his products, feeling full well that he is producing materials that will satisfactorily meet given conditions; yet to the public he is inclined to disclaim any knowledge of the use of rosin and with profound piousness maintains his products are free from such a disgraceful component.

It is true that some very bad varnishes have been made from rosin, but with rosin, as with most other materials, new methods of treatment have been developed and today we find some very high-grade durable varnishes the gum base of which is prepared from it.

It is common practice to make varnishes from both untreated and hardened rosins. The rosin may be dissolved in volatile solvents with or without the addition of drying oils. The solution may be made by the aid of heat, or may be effected in the cold.

Hardened Rosin.—There are a number of ways in which rosin is hardened, the most common method being to treat it with lime or zinc oxide. Lime of a high CaO content is used and the addition of 5 or 6 percent neutralizes a part of the acids of the rosin and results in a harder product than the original. The lime is dusted into the melted gum and a rather

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rapid combination results. Zinc oxide may be substituted for the lime, if preferred. The procedure is the same in both cases.

Rosin Ester.—Another way of preparing rosin for varnish making purposes is to combine it with glycerin. By this method, the acids of the rosin are converted into glycerides, the acid value of the original rosin being reduced from around 155 to 8 or 9, or even lower.

This ester is a very desirable base for high-grade varnishes; when combined with tung oil, varnishes possessing high water and weather-resisting qualities are obtained. Such varnishes need no apologies from the producers and the silly explanations and excuses for making such products should be discarded. Such practices play to public ignorance. It is time to educate the public to the fact that rosin can be prepared in such a way that high-grade varnishes can be made from it.

Other Metallic Resinates.—In general, three metals are used as accelerators in the drying of varnishes: lead, cobalt and manganese. It is quite common to add these metals in the form of resinates. There are advantages and disadvantages in these compounds over the corresponding metal compounds of vegetable oils, depending upon the conditions under which they are used. It is the author's opinion that these metal resinates, contrary to the somewhat popular belief, affect the durability of varnishes little differently than do the linoleates.

Rosin as a Flux.—It is quite a general practice to use rosin in the form of a flux for other varnish resins. The acid of rosin seems to be an efficient dispersions agent or in some cases a good solvent, when mixed with other resins. This property assists in the solution of these resins, thereby eliminating some of the loss due to destructive distillation.

From a paper read at the annual meeting of the American Society for Testing Materials by E. W. Fasig, General Supt., The Lowe Brothers Co.

Steel Scraper Sparks—Danger!

Since so much consideration is being given to the matter of maximum fire preventative, in connection with spray cabinets, it occurs to the writer that in one or two instances, fire in spray booths has been attributed to the spark created by friction when using a steel scraper to clean floors, etc. In this connection, I would suggest that if the scraper is made of brass or aluminum, this danger would be entirely eliminated.

The Underwriters are now recommending that spray booth floors be constructed of non-ferrous metal, but as there are thousands of the other kind now in service (ordinary steel flooring) I believe the suggestion above made will be to the advantage of the trade in general in eliminating the danger of fire from this source.—H. W. Norman.

Every finisher owes it to himself and to his employer, to become acquainted with the use of the chemical fire extinguisher. The employer may have his factory and stock insured, but the employe has no insurance on his job. He probably can get another job but the time required to do so is a total loss.

Inspection

Each part of a Worthington FEATHER (Reg. U. S. Pat. Off.) Valve Vertical Compressor is inspected before assembly. After assembly the machine is given a running test with the valve head removed. This is to make sure that no oil passes the piston.

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Questions and Answers

This service department is conducted to meet the readers' need for prompt information on specific problems, and to give others an opportunity to review the questions and to offer comments, suggestions or answers

Walnut Gum Filler

Can you give me a good formula for a combination filler for walnut on gum and is the process practical?—G. S. P.

Decorating Hot Water Bags

A question that has troubled us is to paint wreaths, sprays of flowers, etc., on rubber hot water bags with oil tube colors. Our last lot was 300 bags, and we mixed the colors with the best spar varnish and laid the paint on very thin. This seemed to give good results. We expect another lot soon and want to know if anyone knows of a better way. —M. K. D.

Cadmium Plated; Peels

Kindly give me any information you have regarding the japanning or painting of a metal that has been cadmium plated. I have had trouble with the paint or japan peeling after baking at a temperature of 225° F., or over. —R. W.

For Exposed Oak

I have tried all the kinds of finishes that I could find on natural oak front doors and windows. But I find that I can only guarantee this for about a year, for during that time it starts to check or crack and gives the moisture a chance to get in, thus turning the oak wood black. Is there anything on the market which I can put under the varnish to keep the oak wood from turning black, as caused by the dampness? If so please let me know by whatever way you can.—J. Kuhn.

Piano Dressing

We have been having a little difficulty in our piano wareroom to find a good dressing and cleaner for dull finished pianos. Our methods are to wash the surface clean with chamois and water or oils mixed with benzine, but they appear more or less oily on surface. We cannot use alcohol with oil on account of the gloss which we do not want on surface. Would appreciate any suggestion that you could give to remedy this trouble.—C. E. W.

Buffing Toy Furniture

We are now making a line of small toy furniture, such as chairs, bureaus, beds, cradles, tables, etc. Our greatest job is sanding after putting on the undercoat.

Our method is all hand work—first a good heavy undercoat, then sanding by hand and finally putting on a good coat of enamel. We get a very good job but the profit all goes into sanding.

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Ask us about your polishing and buffing problems.

Biax Flexible Shaft Company
136 Liberty St., New York

After reading the article on page 48, September issue of INDUSTRIAL FINISHING, by A. J. Daniels, we believe we can buff this work if we can find out how to do it. What size buffing wheel should be used? Can such a wheel be used to buff or sand cradles that are 5-in. long by 1½-in. wide on bottom, by 1½-in. deep? Can it be used for buffing beds that are 5-in. long by 3½-in. wide and where the box is one inch deep? We sand slats and inside of box. Will the wheel buff into corners, that is, as well as we can sand by hand?—D. A. C.

Lacquer First Coat

As we are now using lacquer most altogether—both clear and colored—we would like to ask you the best way to first-coat soft woods so that the grain of the wood will not show through the final coat.—D. & Son.

Stains For Lacquer

We have been told by some salesmen that where an article is to be finished by lacquer, oil stain should not be used. We would appreciate very much if you would give us a little information on mixing stain, filler, shellac, and lacquer.—S. C. Mfg. Co.

Why Does Lacquer Dry Slowly In Spots?

Why is it that in finishing our desk tops with lacquer, we find on some of the tops a place, possibly one foot square, in other instances, a streak 6 or 8-in. wide, running the entire length of the top, that will not dry nearly as

rapidly as the other part of the top?

We are spraying lacquer and sometimes we find a corner or a strip, as we have said before, that will take three or four times as long to dry as the other parts of the desk.—J. N. W.

Practical Filler Practice

Would like to hear something regarding the practice of filler dipping. The tank would have to be large enough for a large parlor chair. The filler would have to stand at least 10-in. deep to accommodate stretchers.

How can filler be kept in solution?

How many pounds of filler should be used to a gallon of benzine for use on gum wood?

When filler sinks out of solution and appears dead and lifeless, how can it best be revived? —S. G. P.

Derby Finish

We are making an oak towel cabinet on which we have been applying a regular varnish finish, but our customer now inquires if it is possible for us to give a "Derby finish." We would appreciate your advising us just what this finish is.—B. B. Co.

We are informed that this is an oak finish similar in color to what is used on modern office desks and office furniture, or possibly a trifle darker than this well known light oak.—I. F.

If lacquer splashes into your eyes, wash them immediately with cold water.

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Farther

By diluting any shellac you could make it spread farther. But we mean, with a third diluting it will spread farther and cover better than any shellac, not excepting a single one.

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Cheaper to Use — and **Better!**

Working on the principle
That lacquers should beautify
And protect—
That a good finish
Can help sell
A poor design—
But a poor finish
Will kill a sale—
We finally succeeded
In perfecting ALAKA
The Practical Lacquer.

WE now have *lacquers* which are most resistant to blushing, *enamels* which do not chip, and *thinners* which are free from bad odors.

(1) ALAKA Lacquers assure *more coverage per unit area.*

(2) *Therefore* less material is used.

Q. E. D.

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Striping Furniture

I noticed in a recent issue of INDUSTRIAL FINISHING someone inquires about practical methods of striping. The best is free hand striping which requires skill and long practice and most of all the best brushes that can be bought, as poor brushes do poor work. Proper care of the brushes after use is another important thing; they should be washed, greased and hung up after each day's work.

Striping can be easily done by a good decorator after practice. The use of a striping brush can not be acquired by everyone, as a steady hand and good eye are absolutely necessary. The striping brush is held between the thumb and first finger, using the other finger for a guide on the edge of the piece or against a straight edge, whichever is used. In most cases the edge of the article is all that is required as a guide.

Always use a full brush of material so that it will carry the full length of the stripe for a good job. Some stripers mark the beginning and ending with a compass, but the eye is a very good judge after a time. There are a few devices to aid the worker in striping, but even these require a lot of practice before one is able to use them to advantage. I think that the George E. Watson Co., of Chicago, carry these articles in stock.

Really, if a concern has much striping to do, it would be to their interest to secure an expert striper, as he can turn out a lot of work and do it neatly and accurately without spoiling some of the jobs. A thorough knowledge

of striping includes more than the average man would think of. —J. K. Cooper.

Lye Solution Destroys Aluminum

We read with interest, Mr. John H. Steffen's article on finishing room cleanliness, in the August issue of Industrial Finishing, and while the general tenor of the article is very good, wish to take exception to the recommendation Mr. Steffen has made covering the cleaning of spray equipment, as he advises placing not only the gun, but the fan blades in a tub of lye, in the latter case leaving it over the week-end until Monday.

This may be very well for certain equipment, and perhaps the particular equipment which Mr. Steffens is using, but wherever an aluminum fan blade is employed, it would probably be missing on Monday morning, as the chemical action of a lye solution on aluminum is such that the aluminum dissolves in this solution.

In view of the above, it is readily seen, that were Mr. Steffen's recommendation to be taken generally, somebody is going to get into trouble. Also the majority of handles, and in some cases, a great deal of the spray gun itself is made of aluminum, and we are sure the manufacturer would advise very strongly against soaking it for any length of time in a lye solution.

We believe it would be well to draw the attention of the trade in general to the inadvisability of soaking aluminum castings in a lye solution.—Paasche Airbrush Co.

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Staining Soft Woods

White pine, cork white pine, sugar white pine and other similar grades of soft woods yield to the same treatment. These woods being very soft and only the finest grades having a uniformly absorbent surface, often show cloudy if the full color stain coat is applied before treatment.

The best results may be obtained by giving the wood a thin coat of mixture of half oil and half turpentine with sufficient strong drier and, if so desired, one quart of liquid filler may be added to a gallon. This will make it sandpaper easier, putting on only enough to equalize the absorption.

After this is thoroughly sandpapered, it is ready for the stain, which should be a linseed oil and turpentine stain mixed with pigment staining color or other similar coloring agents using only enough oil to allow the stain to spread properly. Oak, cherry, mahogany or walnut color are the popular shades.

Yellow pine is used very extensively in the building trades for the service portions and attics of residences and throughout commercial buildings. On this wood the stain should be applied directly on the wood, as it will absorb more evenly than white pine. The large strong markings aid in giving a uniform appearance. Slight wiping with a soft rag will clear up the grain where this is desirable.

This being the easiest and simplest wood to stain, it will take almost any oil color. In kitchens and pantries, where a light gray or white is desired, a stain can be made of white lead thinned like light priming. Applied directly to the wood, wiped slightly if desired and varnished

with an extra pale varnish, makes a very fine appearance. Variation may be made by adding blue, gray or other shades.

Yellow pine staining may be manipulated so as to give a gray weathered effect suitable for certain types of living rooms or dens. This may be done by several applications of water stain, the first coat carrying an acid into the fiber of the wood, which the second application of another acid will turn to color desired.

California redwood, being soft and porous, absorbs stain very much the same as yellow pine and will yield to the same treatment.

Cypress is also in the soft wood class and may be treated as yellow pine except that it contains an oily substance and benzol should be used instead of turpentine. This will dissolve the oil and give better penetration.

(From a paper read by L. B. Titzel at the Philadelphia Convention of the I. A. of M. P. & D.)

Primers for Cement and Plaster

The alkaline nature of cement and lime plaster requires that it be neutralized before applying any kind of paint. When linseed oil is brought into contact with the alkalies—potash, soda, ammonia, or lime—it is saponified or converted into soap and then is more or less soluble in water.

There are a large number of so-called "cement paints" on the market, such paints containing sufficient fatty acid to neutralize the free alkali on the surface of the cement, but it is better to go a little further and rely upon deeper penetration which may be accomplished with a regular "zinc wash" made by dissolving three pounds of ordinary crys-

Avoid Removing Checked Varnish Surfaces by the Use of

KNITTEEN

THERE are times when it is necessary to resurface checked varnish finishes—and here is where KNITTEEN saves time, labor and money. Instead of removing all the finish and applying new, simply brush on KNITTEEN. It will actually knit the cracks together, making the surface as smooth and presentable as it was before checking.

Price, $5.00 per gal.
Trial ¼-gal., postpaid, $2.00

Order a can of KNITTEEN today and give it a trial—you will not be without it after you use it once.

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Satinite Colors

In liquid form, ready for the spray or brush, in over 40 popular shades, offer you the most satisfactory line for the production of colored furniture combinations so much in demand.

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Write for information, or better still, let our service man show you what these materials will do.

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tallized zinc sulphate in one gallon of hot water.

This "zinc wash" applied on cement or plaster immediately neutralizes the free alkali and converts the lime into insoluble (calcium sulphate) form. If applied hot the penetration is sufficiently deep to insure a lasting job on new or "green" cement, but the solution is also very efficient when cold, and usually it is applied cold.

Freshly plastered or "hot" walls often cause serious trouble when covered with wallpaper, by the lime striking through and discoloring the paper, producing "lime stains" which bleach the blues and greens and delicate red colors of the designs. By giving the wall one or two applications of "zinc wash", allowing two days after each application for drying, papering or painting may then be safely done.

Any kind of oil paint may be used on cement or plaster after the surface has been treated with the zinc wash, but excellent results are obtained with paste paint thinned to proper consistency ready to use, with the following mixture:

10 parts boiled linseed oil.
5 parts implement coach varnish.
1 part kerosene oil.

The varnish referred to is the same type of "long oil" varnish previously alluded to containing from 40 to 45 gallons of China wood oil per 100-lbs. of rosin. The rosin combines with any free lime present to form insoluble calcium (lime) resinate. The kerosene oil is used to increase the waterproof properties of the paint and cause it to work easily under the brush. The only objection to kerosene oil in the paint is that it retards drying somewhat.—F. Putnam.

American Tung Oil

American-grown tung oil may soon add to the farmers' income in the South and at the same time free the United States from the control of another foreign monopoly of an essential raw material.

More than 200,000 Chinese tung oil trees have already been planted in and around Gainesville, Fla., and their flourishing growth is arousing interest in other southern states as well, according to C. C. Concannon, chief, and G. H. Priest of the chemical division of the U. S. Department of Commerce.

Chinese wood oil or tung oil is an important constituent of waterproof varnishes and paint liquids and linoleum. Manufacturers in the United States import around 100,000,000-lbs. annually. It is a valuable oil in the manufacture of high grade products because it is a rapidly drying oil and gives a higher gloss and a more water-resisting finish than any other material of this kind.

All the tung oil now on the world market comes from China. Because of the many political upheavals that have taken place there in recent years, the amounts that have been shipped out from the interior where it is produced have fluctuated greatly. American manufacturers, who are the greatest purchasers, have had to take what they could get and at the prices asked. The general uncertainty also enabled speculators to manipulate the market to their benefit.

Furthermore, the Chinese method of extracting the oil from the nuts of the tung oil tree is very crude, and the product is often times inferior and impure. Climatic conditions in north central Florida and some of the Gulf

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states are very similar to those of the Yang-tze River valley in China where nine-tenths of all the tung oil of commerce is produced.

The contention of Chinese growers that America will never be able to produce the oil commercially in competition with China, because of high labor costs in the United States, does not discourage American growers. They do not believe that the labor problem will ever be serious. The nuts fall to the ground when ripe and can lie for months without spoiling, and can therefore be gathered when labor is available. The trees require little attention, and are almost entirely free from insect pests.

Extraction of the oil from the nuts will be done at a central plant, and by means of modern machine methods a much better grade of oil is expected to be produced. A large and steady supply of American tung oil may have its effect on civilization, and may mark the beginning of new industrial growth in a number of directions.—Science Service.

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